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(51) INT CL<sup>6</sup>

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(52) UK CL (Edition O )

B7E ECF E102

(56) Documents Cited

GB 2289874 A

GB 2270051 A

GB 2260300 A

GB 0415843 A

US 5125678 A

US 5069468 A

US 4441729 A

(58) Field of Search

UK CL (Edition O ) B7E ECF

INT CL<sup>6</sup> B62K 15/00

(54) Folding, dismantlable bicycle with full size wheels and full diamond frame

(57) Rear "triangle" 21 detaches near the seat clamp and pivots, using clamps 24 (detail, fig. 3) about or near the bottom bracket, forwards to overlap the main tube triangle (fig.2), such that bridge 25 rests against rubber stop 27 on down tube 26. Seat, wheels, and cranks may be detached using quick release fittings. The handlebars and stem extension 28 are removeably attached to the fork column by a quill or boss with a clamp. Stem 28 may be a "stoker" stem, as used on the rear of a tandem. Gear and brake mechanisms, chain and control cables remain attached during folding and unfolding operations. The rear triangle may be attached to the main frame with a spring and damper at point 30, thus effecting rear suspension. In this embodiment, clamp 24 would remain unclamped, allowing the hinge to act as a suspension pivot.

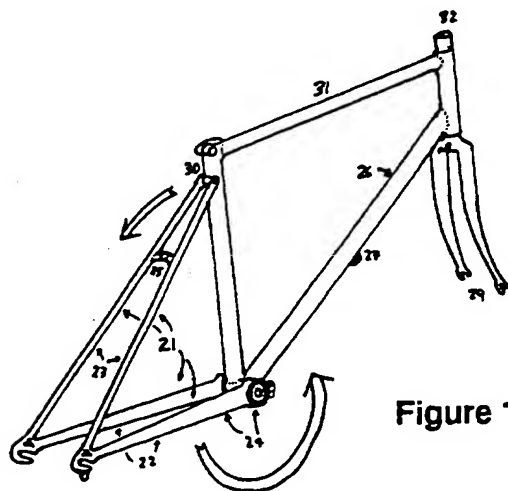


Figure 1

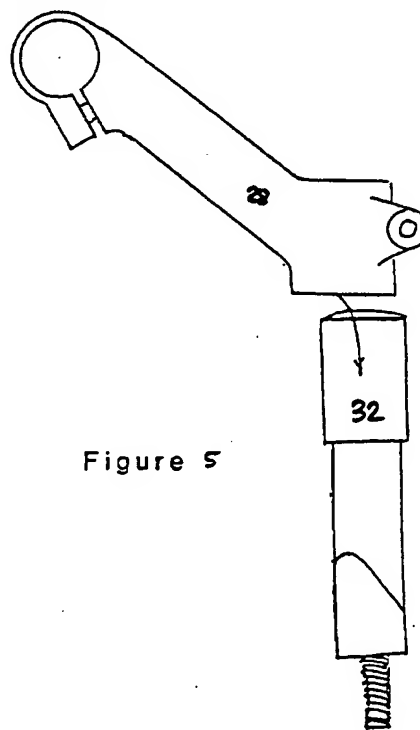


Figure 5

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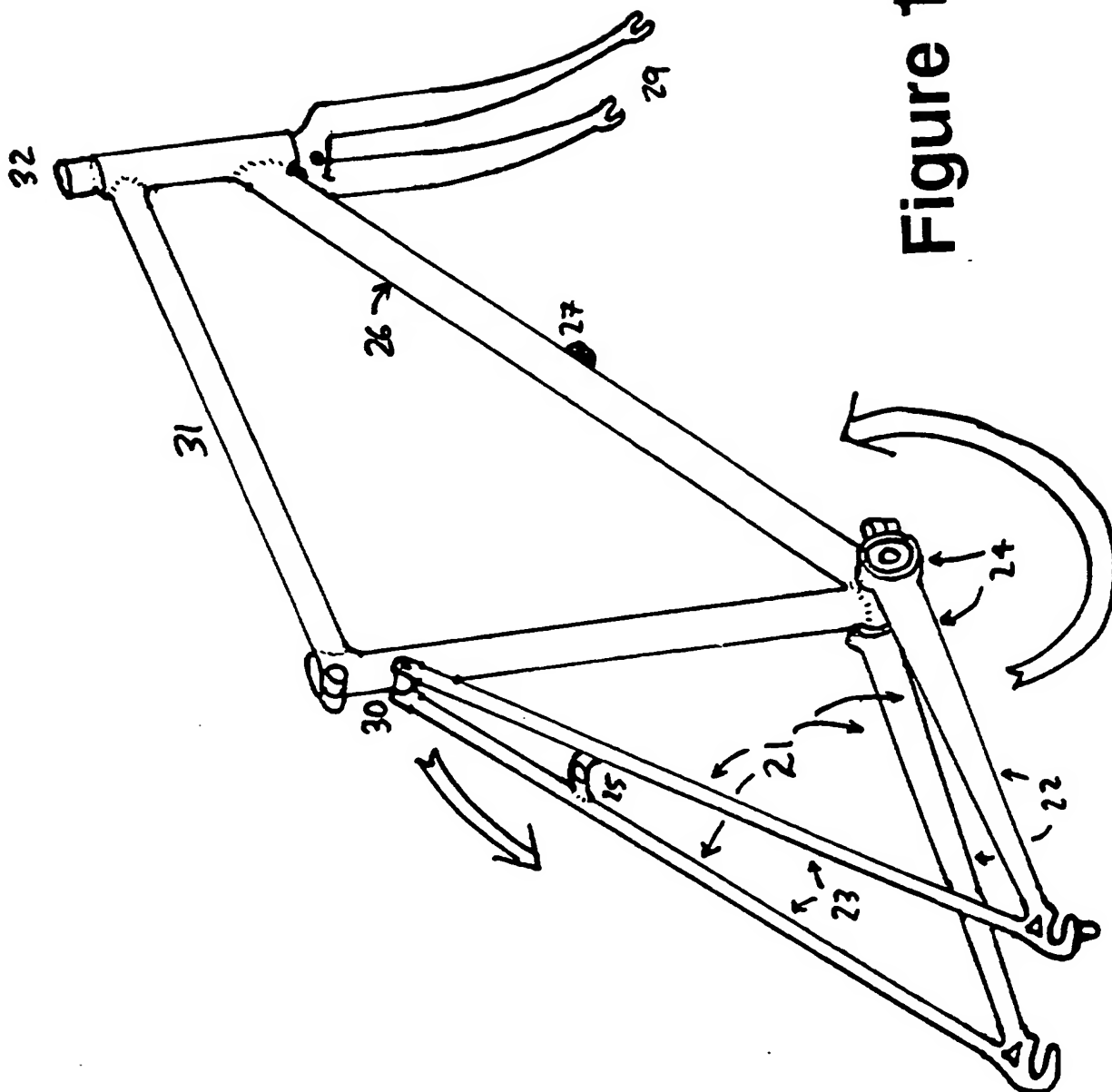


Figure 1

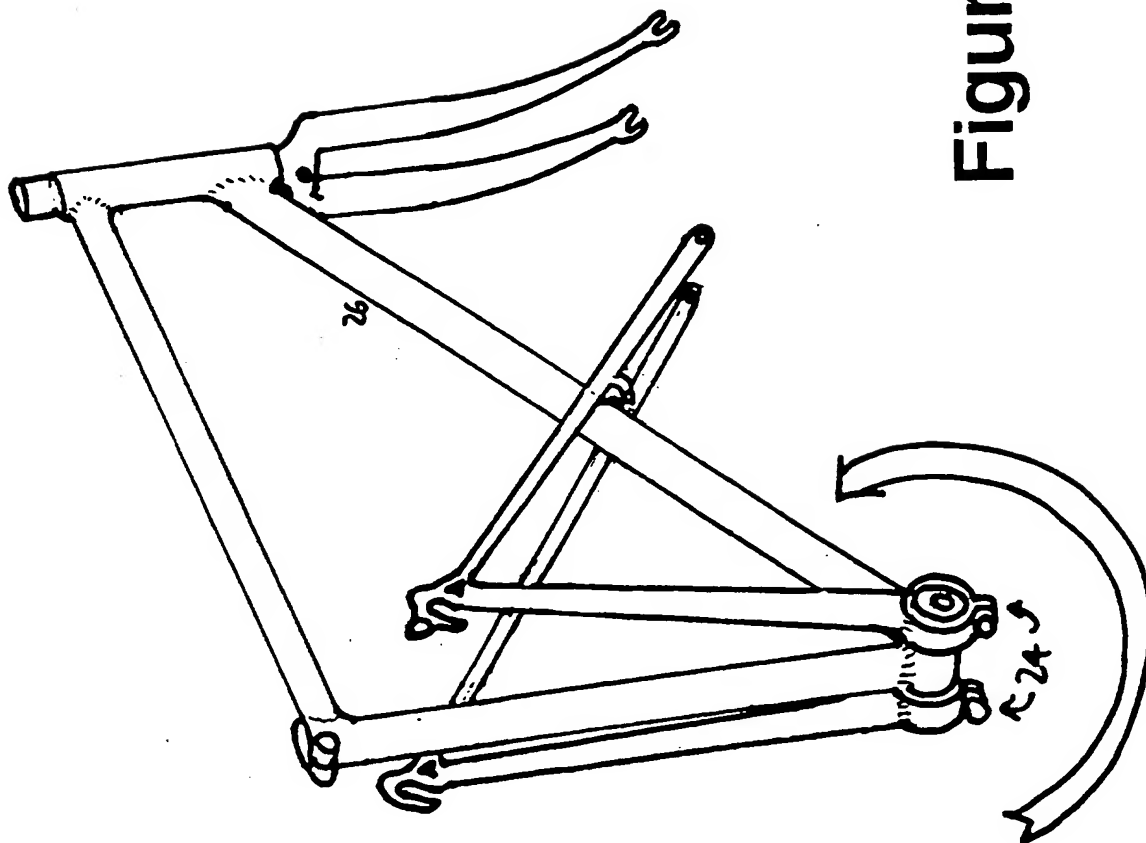


Figure 2

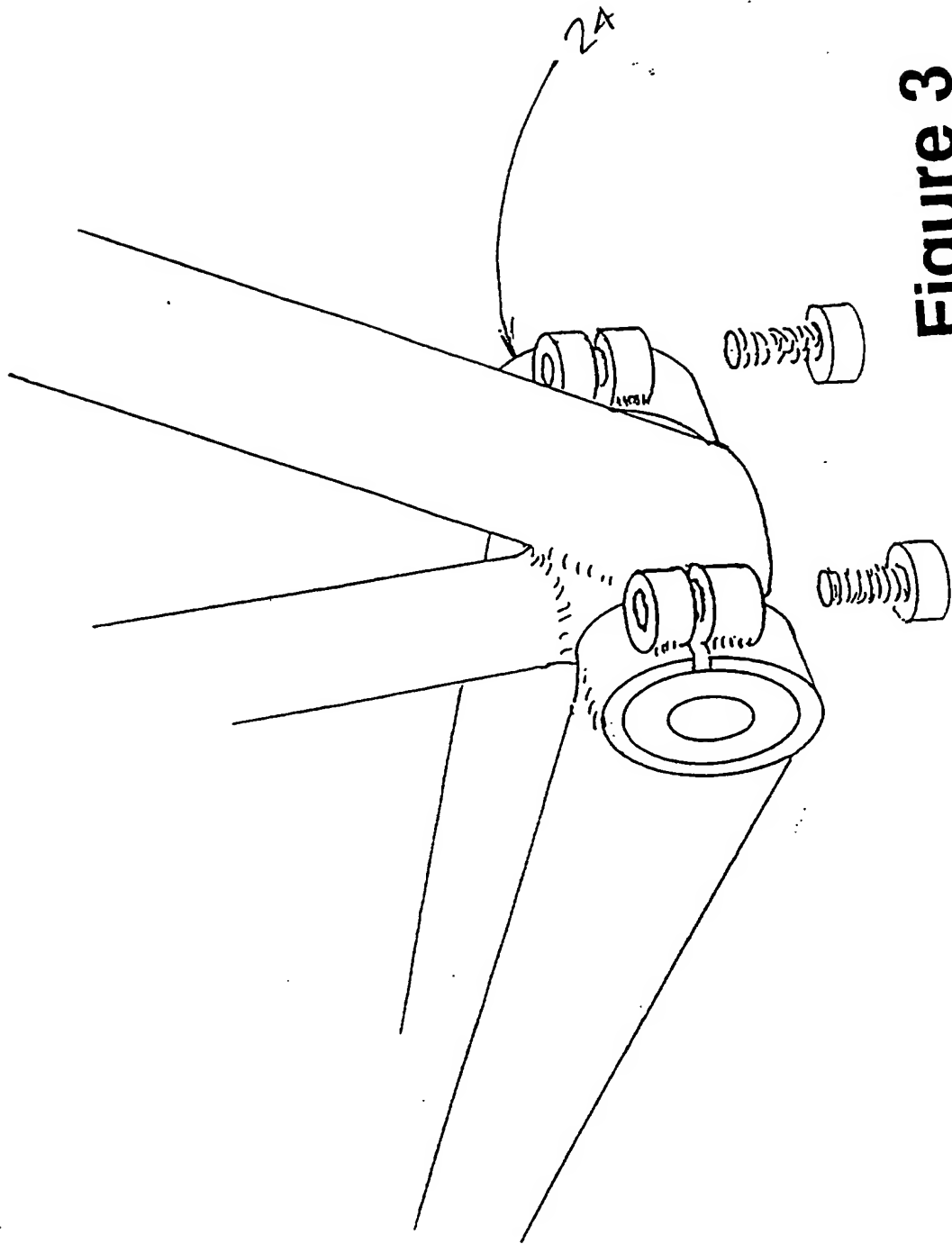
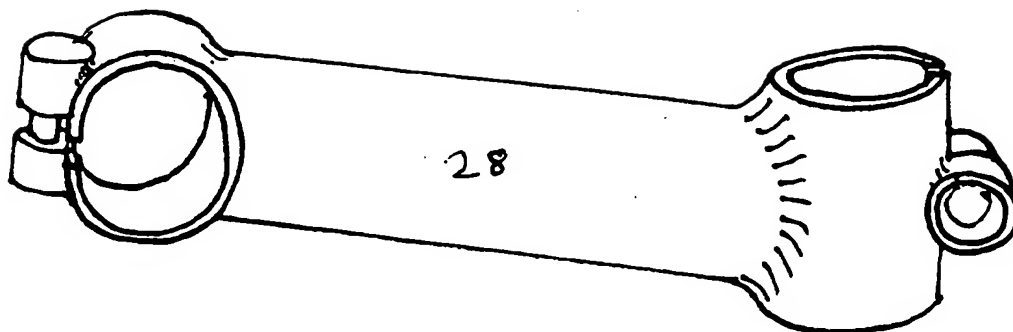
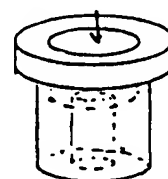


Figure 3

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EXPANDER  
BOLT



32

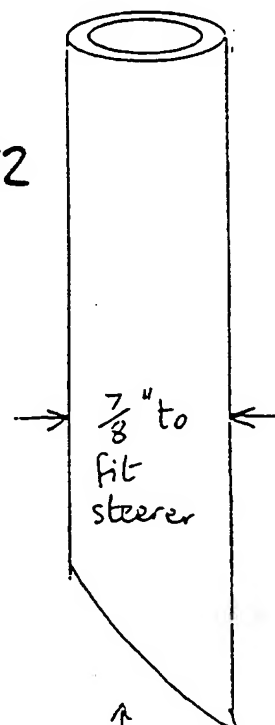


Figure 4

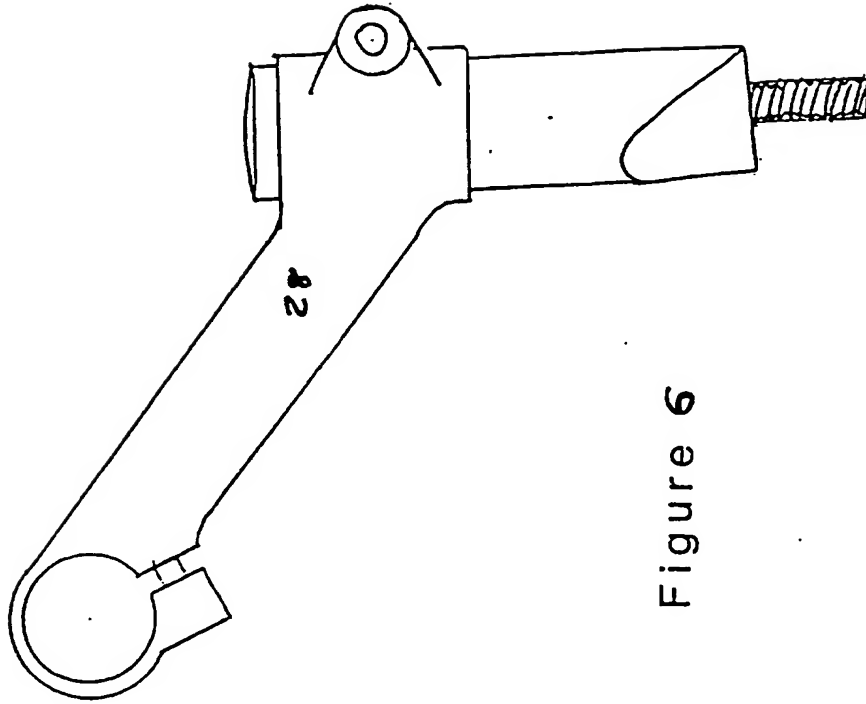


Figure 6

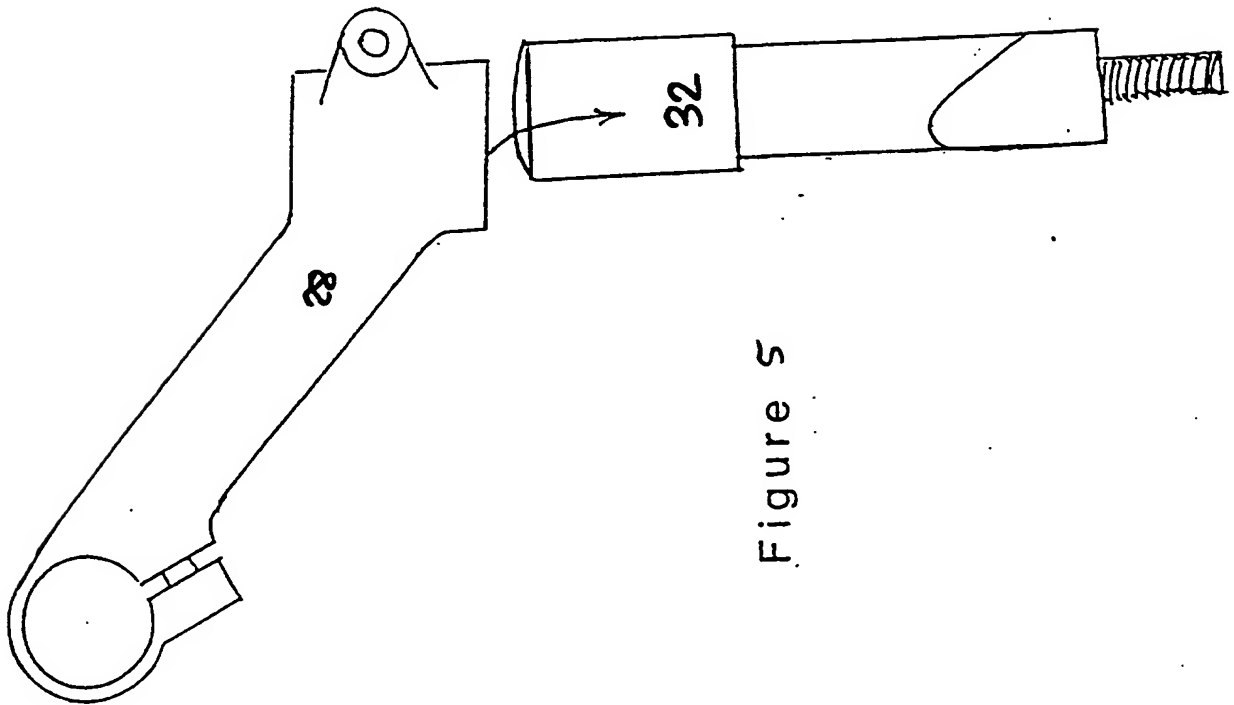


Figure 5

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## FOLDING DISMANTLEABLE BICYCLE

This invention relates to a bicycle which can be dismantled and folded for compactness, carriage and storage.

Folding bicycles are readily available but are rarely lightweight orthodox diamond frame designs with full size wheels. Almost all bicycles may be dismantled, though the process may be difficult and require special tools and skills.

Transport companies make few restrictions when conveying covered, collapsed bicycles as passengers' luggage, but often restrict uncovered and fully erected bicycles. Private car luggage spaces are usually too small for full size bicycles and either roof and boot racks are required to carry them or the bicycle must be dismantled extensively.

Left luggage facilities may refuse bicycles as an item but accept a more compact package containing one.

An enclosed, compactly packed bicycle may be more acceptably stored within a dwelling or inside at work for security.

According to the present invention there is provided an almost completely orthodox double diamond frame, whose rear triangle swings about an axis at or near the bottom bracket. The rear triangle in normal use is bolted to the seat tube.

The handlebars, which may be road cycle "drops" or mountain cycle "straights", are fitted to a stem usually found on the rear of a tandem bicycle called a "stoker-stem". This in turn is attached to a boss joined to the steerer tube in the normal fashion.





# CLAIMS

- 1 A folding bicycle whose frame hinges about an axis near and parallel to or colinear with the bottom bracket axle.
- 2 A folding bicycle whose hinge is clamped rigidly before the folding process.
- 3 A folding bicycle whose hinge is clamped rigidly after the folding process.
- 4 A folding bicycle of diamond frame geometry using orthodox wheels and components.
- 5 A bicycle whose handlebars and stem extension are easily detached from the stem quill or a plug or boss fitted to the steering column.
- 6 A folding bicycle whose folding action is combined with rear suspension.
- 7 A folding cycle employing a completely orthodox rear triangle permanently assembled into one piece composed of chain-stays, seat-stays, top-eyes, ends and brake bridge.
- 8 A folding cycle employing a completely orthodox rear triangle which is clamped to the bottom bracket and bolted to the seat cluster therefore resulting in a rigid frame.

**Patents Act 1977**  
**Examiner's report to the Comptroller under Section 17**  
**(The Search report)**

Application number  
GB 95196

**Relevant Technical Fields**

- (i) UK Cl (Ed.O)      B7E (ECF)  
(ii) Int Cl (Ed.6)      B62K (15/00)

Search Examiner  
K STRACHAN

Date of completion of Search  
22 JANUARY 1996

**Databases (see below)**

- (i) UK Patent Office collections of GB, EP, WO and US patent specifications.

Documents considered relevant following a search in respect of Claims :-  
1

(ii)

**Categories of documents**

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|--|---|
| <p><b>X:</b> Document indicating lack of novelty or of inventive step.</p> <p><b>Y:</b> Document indicating lack of inventive step if combined with one or more other documents of the same category.</p> <p><b>A:</b> Document indicating technological background and/or state of the art.</p> | <p><b>P:</b> Document published on or after the declared priority date but before the filing date of the present application.</p> <p><b>E:</b> Patent document published on or after, but with priority date earlier than, the filing date of the present application.</p> <p><b>&amp;:</b> Member of the same patent family; corresponding document.</p> |
|--|---|

Category	Identity of document and relevant passages		Relevant to claim(s)
X	GB 2289874 A	(PARRY) notice that Claim 1 is identical to Claim 1 in this application	1-5, 7 at least
X	GB 2270051 A	(MOORE) Figures 1 and 7	1-4, 7, 8 at least
X	GB 2260300 A	(MOORE) whole document	1-4, 7, 8 at least
X	GB 415843	(CAMILLIS) whole document	1-4 at least
X	US 5125678	(BOGEN) Figures 3 and 6; notice rear suspension	1-4, 6 at least
X	US 5069468	(TSAI) Figures 1 and 2	1-4, 7, 8 at least
X	US 4441729	(BORG-WARNER) Figures 1 to 3	1-4, 7, 8 at least

**Databases:** The UK Patent Office database comprises classified collections of GB, EP, WO and US patent specifications as outlined periodically in the Official Journal (Patents). The on-line databases considered for search are also listed periodically in the Official Journal (Patents).

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